

What is claimed is:

1. A monitoring device for melting furnaces to facilitate the monitoring of the break out of melt, comprising a closed circuit of several electrically conductive sections with at least a partially conducting surface and a measuring/displaying device, wherein a first conductor section is series connected to an ohmic resistor R and a second conductor section, and wherein the first conductor section is arranged directly adjacent, however, electrically isolatingly spaced from and with respect to the second conductor section.

2. The monitoring device for melting furnaces according to Claim 1, wherein the conductor sections are interleaved in a comb-like construction or are looped meanderingly around one another.

3. The monitoring device for melting furnaces according to Claim 1, wherein the ohmic resistor R is larger by a factor 100 to 1000 than the resistance value of the series connected conductor sections.

4. The monitoring device for melting furnaces according to Claim 1, wherein the ohmic resistance value $R = 0.5$ to 50 kohm .

5. The monitoring device for melting furnaces according to Claim 1, wherein the ohmic resistance value $R = 1$ to 5 kohm .

6. The monitoring device for melting furnaces according to Claim 1, wherein the measuring/displaying device indicates during undisturbed normal operation essentially the magnitude of the ohmic resistor R, during breakdown due to a conductor break, the resistance value of "infinite" and during the run out of melt the resistance value of "zero" (short circuit).

7. The monitoring device for melting furnaces according to Claim 1, wherein the resistance value indications "infinite" or "zero" are each coupled with an acoustic or optic display.

8. The monitoring device for melting furnaces according to Claim 1, wherein the resistance value indication "zero" is coupled with a device for turning off of the furnace.

9. A melting furnace with a monitoring device according to Claim 1, wherein the conductor sections are arranged around the crucible filled with melt.

10. The melting furnace with a monitoring device according to Claim 9, wherein the conductor sections are arranged holohedrally on the circumference of the vessel filled with melt.

11. The melting furnace with a monitoring device according to Claim 9, wherein the conductor sections are arranged on the surface of a refractory liner which faces away from the crucible filled with melt.

12. The melting furnace with a monitoring device according to Claim 11, wherein the refractory liner consists of a ceramic material.

13. The melting furnace with a monitoring device according to Claim 1, wherein the crucible filled with melt forms a part of a conductor section.

14. The melting furnace with a monitoring network according to Claim 9, wherein several monitoring devices are arranged around the crucible filled with melt.